

# MONTANA CLINICAL COMMUNICATION AND SURVEILLANCE REPORT



Montana Department of Public Health and Human Services  
Chronic Disease Prevention and Health Promotion Program  
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## **AWARENESS OF HEART ATTACK AND STROKE WARNING SIGNS AND SYMPTOMS IN AMERICAN INDIANS AND WHITES**

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- Heart Smart - Heart Healthy VIII  
"Making The Connection"
- 8th Annual Montana Cardiovascular  
Health Summit Conference

## **BACKGROUND**

National and regional studies from the United States suggest that American Indians have high mortality rates from heart disease and stroke.<sup>1-2</sup> Long-term data show that heart disease and stroke mortality rates for American Indians and Alaska Natives surpassed the rates for whites in the mid-1980's.<sup>3</sup> Recently published data from the Strong Heart Study show that American Indians have a higher incidence of stroke compared to the US white and black populations.<sup>4</sup>

To decrease mortality, it is essential that individuals recognize the warning signs and symptoms of heart attack and stroke and the importance of calling 911 to access timely treatment. Previous studies suggested that there were important racial and ethnic disparities in awareness, primarily between non-Hispanic Blacks and Hispanics compared to non-Hispanic whites.<sup>5</sup> This report examines the level of awareness of heart attack and stroke warning signs among American Indians and whites in Montana utilizing data from the Behavioral Risk Factor Surveillance System (BRFSS) survey.

## METHODS

Data from the 2005 BRFSS survey were used to estimate awareness of heart attack and stroke warning signs among American Indians and whites.<sup>6</sup> Respondents were asked five questions to assess their awareness of the warning signs for heart attack. Symptoms included 1) pain or discomfort in the jaw, neck or back; 2) feeling weak, lightheaded or faint; 3) chest pain or discomfort; 4) pain or discomfort of the arms or shoulder; and 5) shortness of breath. Awareness of stroke warning signs was also assessed using five questions, which asked about 1) sudden confusion or trouble speaking; 2) numbness or weakness of the face, arm or leg; 3) trouble seeing in one or both eyes; 4) trouble walking, dizziness or loss of balance; and 5) severe headache with no known cause. Additionally, respondents were asked what their first action would be if they thought someone was having a heart attack or stroke. The response categories included 1) taking the person to the hospital, 2) advising the person to call the doctor, 3) calling 911, 4) calling a spouse or family member or 5) doing something else.

SPSS v15.0 software was used to calculate weighted estimates for each warning sign for heart attack and stroke and the need to call 911; 95% confidence intervals; and odds ratios for American Indians compared to whites overall, and by age and sex (Table 1). The percentage of American Indian and white respondents who correctly identified all five warning signs for heart attack and stroke were also estimated. Respondents who refused to answer one or more

of the individual questions regarding the heart attack or stroke warning signs were not included in these analyses.

## RESULTS

Among respondents to the 2005 Montana BRFSS (N = 4,983), 425 were American Indian and 4,418 were white. American Indians were significantly younger than whites (mean age 40.2 years vs. 47.3 years,  $P < 0.001$ ). There were no differences in the proportion of American Indians or whites who were male (48% vs. 49%,  $P = 0.74$ ).

American Indians were less likely to identify chest pain or discomfort as a warning sign for heart attack compared to whites (Table 1). American Indians were also less likely to identify confusion and trouble speaking; numbness of the face, arm or legs; vision disturbances; difficulties walking; and loss of balance as warning signs for stroke compared to whites. Less than half of American Indians and whites correctly identified five warning signs for heart attack or stroke (Table 2). There were no significant differences in awareness of the five warning signs for heart attack or stroke between American Indians and whites, overall or by age or sex.

There were no significant differences in the proportion of American Indian adults (81.7%, 95% CI 75.2-86.8%) who indicated the first thing they would do is call 911 if they thought someone was having a heart attack or stroke

**Table 1. Awareness of individual signs and symptoms of heart attack and stroke among adult American Indians and whites, Montana, 2005.**

	American Indian	White	
	% (95% CI)	% (95% CI)	OR (95% CI)
<b>Heart attack signs/symptoms</b>			
Pain/discomfort in jaw, neck or back	48.8 (41.6-56.1)	55.1 (53.0-57.1)	0.80 (0.58-1.06)
Feeling weak, lightheaded or faint	64.9 (57.8-71.3)	66.4 (64.4-68.3)	0.94 (0.69-1.28)
Chest pain or discomfort	89.6 (85.3-92.8)	93.8 (92.7-94.7)	0.57 (0.37-0.88)
Pain/discomfort in arms/shoulders	84.6 (78.0-89.5)	89.2 (87.7-90.6)	0.67 (0.42-1.06)
Shortness of breath	82.8 (76.6-87.6)	87.2 (85.7-88.5)	0.71 (0.47-1.06)
<b>Stroke signs/symptoms</b>			
Sudden confusion or trouble speaking	77.5 (70.7-83.1)	90.0 (88.6-86.9)	0.38 (0.26-0.56)
Sudden numbness/weakness of face, arm or leg	91.9 (88.0-94.7)	95.4 (94.5-96.2)	0.55 (0.34-0.89)
Sudden trouble seeing in one/both eyes	62.8 (55.4-69.7)	71.8 (69.9-73.6)	0.67 (0.48-0.92)
Sudden trouble walking, dizziness or loss of balance	82.7 (76.1-87.7)	88.3 (86.9-89.5)	0.63 (0.42-0.97)
Severe headache with no known cause	56.7 (49.3-63.8)	58.6 (56.5-60.6)	0.93 (0.68-1.27)

**Table 2. Awareness of all five signs and symptoms of heart attack and stroke among adult American Indians and whites, Montana, 2005.**

	American Indian	White	
	% (95% CI)	% (95% CI)	OR (95% CI)
<b>Awareness of heart attack signs/symptoms</b>			
Total	32.9 (26.5-39.9)	38.2 (36.3-40.2)	0.79 (0.58-1.09)
<b>Sex</b>			
Male	27.2 (19.0-37.3)	33.6 (30.7-36.7)	0.74 (0.46-1.20)
Female	38.1 (28.9-48.2)	42.7 (40.2-45.2)	0.83 (0.54-1.26)
<b>Age</b>			
18-44	27.5 (19.0-37.9)	34.2 (31.0-37.6)	0.73 (0.44-1.20)
45+	41.5 (33.0-50.7)	41.5 (39.2-43.8)	1.00 (0.69-1.47)
<b>Awareness of stroke signs/symptoms</b>			
Total	39.6 (32.8-46.7)	46.7 (44.7-48.8)	0.75 (0.55-1.01)
<b>Sex</b>			
Male	38.8 (29.0-49.5)	44.3 (41.1-47.5)	0.80 (0.51-1.26)
Female	40.3 (31.3-50.0)	49.1 (46.6-51.6)	0.70 (0.47-1.05)
<b>Age</b>			
18-44	35.0 (25.9-45.3)	42.2 (38.7-45.7)	0.74 (0.47-1.16)
45+	46.8 (38.0-55.9)	50.4 (48.1-50.8)	0.87 (0.60-1.26)

compared to whites (84.1%, 95% CI 82.4-85.7%, OR 0.84, 95% CI 0.56-1.26). American Indians aged 45 years and older were less likely to indicate they would first call 911 if they thought someone was having a heart attack or stroke compared to whites (76.3%, 95% CI 67.3%-83.4% vs. 83.9%, 95% CI 82.1%-85.6%, OR 0.62, 95% CI 0.39-0.98). There were no significant differences in intentions to call 911 between American Indian or white men, women or persons 18 to 44 years of age (data not shown).

## DISCUSSION

Our findings suggest American Indians had a lower level of awareness of specific heart attack and stroke warning signs compared to whites in Montana. Although awareness of five or more heart attack and stroke warning signs did not differ between American Indians and whites overall, the levels were suboptimal in both populations.

Despite the limitations of telephone surveys, there are important clinical and public health implications. The relative increases seen

nationally in stroke and heart disease mortality in American Indians compared to whites suggest that effective strategies to increase awareness of the need to call 911 are particularly needed for American Indians.<sup>3</sup> And the case fatality for first stroke was higher in American Indians than among whites or blacks of similar age, indicating that early recognition and seeking treatment are important for American Indians.<sup>4</sup> In Montana, on-going efforts have included public education campaigns in larger communities and on American Indian reservations to raise residents' awareness of heart attack and stroke signs and symptoms and the need to call 911 immediately (Figures 1 & 2).

An equally important issue is the need to reduce the risk factors for stroke and heart attack among all Montanans. Clinical and public health efforts to increase awareness of warning signs and use of 911 must be accompanied by effective efforts to control hypertension, lipid abnormalities, obesity, smoking and other important risk factors.

**Figure 1. Stroke billboard for Montana Indian reservations.**



**Figure 2. Stroke billboard for larger communities in Montana.**



<sup>1</sup> Rhoades DA. Racial misclassification and disparities in cardiovascular disease among American Indians and Alaska Natives. *Circulation* 2005; 111(10):1250-6

<sup>2</sup> Harwell TS, Oser CS, Okon NJ, Fogle CC, Helgeson SD, Gohdes D. Defining disparities in cardiovascular disease for American Indians: trends in heart disease and stroke mortality among American Indians and whites in Montana, 1991 to 2000. *Circulation* 2005; 112(15):2263-7

<sup>3</sup> Kunitz SJ. Ethics in public health research: changing patterns of mortality among American Indians. *Am J Public Health* 2008; 98(3):404-11

<sup>4</sup> Zhang Y, Galloway JM, Welty TK, et.al. Incidence and Risk Factors for Stroke in American Indians. The Strong Heart Study. *Circulation* 2008; 118:1577-1584

<sup>5</sup> Greenlund KJ, Keenan NL, Giles WH, Zheng ZJ, Neff LJ, Croft JB, Mensah GA. Public recognition of major signs and symptoms of heart attack: seventeen states and the US Virgin Islands, 2001. *Am Heart J* 2004; 147(6):1010-6

<sup>6</sup> Centers for Disease Control and Prevention. BRFSS: Turning information into health. <http://www.cdc.gov/BRFSS> (Accessed January 20, 2008)

## **HEART SMART - HEART HEALTHY VIII "MAKING THE CONNECTION"**

**FEBRUARY 5 & 6, 2009**

**Holiday Inn - Cody, Wyoming**

The Cody Clinic's annual cardiovascular, diabetes and cancer education update series will be held on Thursday and Friday, February 5th & 6th, 2009. For more information, contact Dian True, RN, CDE at (307) 527-1947 or e-mail [dtrue@billingsclinic.org](mailto:dtrue@billingsclinic.org)

## **MONTANA CARDIOVASCULAR HEALTH SUMMIT**

**APRIL 3, 2009**

**Holiday Inn Downtown at the Park,**

**Missoula, Montana** - The Cardiovascular Health Program's annual professional conference will be held on Friday, April 3rd, 2009. This year's keynote topic is long-term behavioral management of weight and type 2 diabetes. For more information, contact Crystelle Fogle at (406) 947-2344 or e-mail [cfogle@mt.gov](mailto:cfogle@mt.gov)

## WHAT ARE THE MONTANA DIABETES PREVENTION AND CARDIOVASCULAR HEALTH PROGRAMS AND HOW CAN WE BE CONTACTED?

The Montana Diabetes Control and Cardiovascular Health Programs are funded through cooperative agreements with the Centers for Disease Control and Prevention, Division of Diabetes Translation (U32/CCU822743-05), the Division for Heart Disease and Stroke Prevention (5U50 DP000736-02) and through the Montana Department of Public Health and Human Services.

The mission of the Diabetes Control and Cardiovascular Health Programs is to reduce the burden of diabetes and cardiovascular disease among Montanans. Our web pages can be accessed at <http://www.diabetes.mt.gov> and <http://montanacardiovascular.mt.gov>.

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